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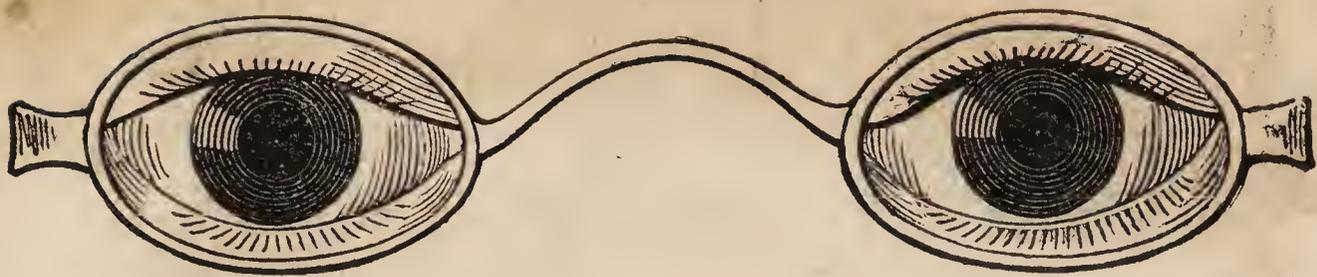
J. T. HUDSON

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2039

SPECTACLÆNIA;

OR THE

SIGHT RESTORED, ASSISTED, AND PRESERVED

BY THE USE OF

SPECTACLES;

WITH

SUGGESTIONS TO SPECTACLE WEARERS AND OTHERS AS
TO THEIR CHOICE, AND EQUITABLE PRICES:

BEING AN

EPITOME OF PRACTICAL AND USEFUL KNOWLEDGE

ON THIS POPULAR AND IMPORTANT SUBJECT.

BY J. T. HUDSON,

Optician and Spectacle Maker to many eminent Opticians,

HENRIETTA STREET, CAVENDISH SQUARE.

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INTRODUCTION.

THE use of spectacles by persons of every age has become so general, the advantages derived from their use so great, the commerce produced by their manufacture so extensive, and the assistance rendered by them to many thousands of our fellow-creatures so benevolent, that it is presumed no apology will be required from an humble individual in thus attempting to communicate to the public whatever information respecting spectacles, and spectacle wearers, he may have acquired in his long and extensive experience as a spectacle maker, and in his profession of adjusting spectacles and eye-glasses properly and successfully to the eyes and heads of those numerous and excellent ladies and gentlemen to whom he has communicated the inestimable blessing of continuous, distinct, and perfect vision.

It will be attempted in these pages (a first literary attempt) to exhibit the abuses and impositions which have been practised by spectacle venders, more frequently in the provincial towns, to the great scandal of our most useful and honourable occupation; and it must be admitted that there is no profession in which the system of puffing and extortion, by specious advertisements in the country newspapers, has been more generally or more successfully practised, nor one in which the injury inflicted on the eyes or in the pockets of the public has been greater.

It will be necessary to shew more particularly how this has been done, and also to point out a certain criterion by which to detect the spurious spectacles of the itinerant puffer, and the extortionate prices of others ; and thus to enable the unwary or uninitiated in spectacle wearing to protect themselves and their property, and also to discriminate that most useful member of society, the fair-dealing optician, from the high-priced spectacle vender, who too frequently, in country towns, is equally ignorant of fair dealing and of fitting spectacles suitable to the eye and the head.

The writer has been a spectacle maker and optician for many years, and his ancestors have professed the same useful occupation in a very large provincial town. He has made spectacles extensively for the most eminent London opticians, and also for many provincial opticians, whose names and places of abode are given in the last page, and for whose past favours the writer is much obliged. He manufactures now chiefly for the wearer, as ladies and gentlemen at the present day prefer their spectacles and eye-glasses being sent direct from the maker, it being so essential that they should be most accurately fitted, and the expence of carriage now being so reduced to all parts of the united kingdom. It is also proposed to give the reader of imperfect sight some advice, as to whether he requires the use of spectacles, and in what case they may be of service to him. The scientific reader, conversant with this subject, will find the language divested of technicalities, and containing elementary information ; for to render this book as useful to all classes as the general use of spectacles demands, any other style could not have been adopted.

The writer is desirous of communicating complete and useful information to ladies and gentlemen on the very popular subject of spectacles, &c. ; and

should he succeed in this object, he will be amply remunerated for the remonstrances he has received from some members of his profession (who are interested and very earnest in upholding higher prices) in consequence of his determination to supply the public with his spectacles at the prices stated in this pamphlet.

J. T. HUDSON.

*Henrietta Street, Cavendish Square,
London.*

The best Spectacles described.

OF whatever materials the frames of a pair of good spectacles may be made, the weight (without the glasses or pebbles) should not exceed eight pennyweights, Troy; and elastic blue steel is decidedly the best material to be used in the frames; indeed, the lighter a pair of spectacles can be made, the pleasanter they will wear; and of the above weight they can be made to wear for two or even three years, in the hands of a careless wearer, and much longer when carefully handled and kept in a case. It must be observed, that the blue steel frames always lose their elasticity when the blue enamel is worn off: this can be restored, at an expence of two shillings and sixpence, and is money well expended, as they wear much longer when this is attended to once or twice a year. Some of the blue steel frames are made lighter than a sixpence, and these are absolutely invisible to an observer at a very short distance, but they are not durable, and, therefore, not recommended to those who practise economy. His late Majesty George the Fourth wore blue steel spectacles, and it must

be acknowledged that he had an exquisite taste in matters of this kind. The frames should be well tempered, hardened, and proportionably made, so that when the sides are stretched wide apart, they should exhibit an equal curve. They should be both exactly of the same length and strength, being gradually weaker towards the ends. When they are thus stretched wide apart (much wider than the face) the front, or part that contains the glasses, should be perfectly straight, as, if it be so weak as to bend, the spectacles will not be serviceable or proportionably made. The front should not be any stronger than is just necessary to avoid this fault.

The width of the spectacle fronts should be most carefully attended to: the sides should not touch the temples, and the bridge of the spectacles should have an exceedingly slight pressure on the nose, to avoid disfiguring it by a most unsightly mark, and to avoid producing headache or any unpleasant sensations by pressure on the temples: this to nervous wearers will be of the greatest importance. Care must be taken that the centres of the glasses coincide with the centres or pupils of the wearer's eyes, which are generally about $2\frac{1}{4}$ inches apart. Distinct vision cannot be obtained unless this be strictly adhered to.

The sides should be a quarter of an inch or more longer than the front, with single joint spectacles; and three inches longer than the front when they are extended with double jointed spectacles. The best joint for spectacles is called turnpin, being that in which the extra little piece of the side turns on a pin, instead of moving up and down as they were formerly made. The spectacle front is usually from four to five inches long, corresponding with the width of the wearer across the temples. The shape of the glasses or pebbles is not material, as oval, round, octagonal, parabolic, or horse-shoe

shape answers the purpose equally well. The size of the glasses or pebbles should be much larger than the pupils of the wearer's eyes when dilated in a room nearly dark, which are usually not more than one-fifth of an inch in diameter. The writer has found, in many thousands of cases in which he has fitted spectacles with uniform success, that glasses of three-quarters or one inch in diameter have been quite large enough for all useful purposes. Persons who complain of seeing the rim of the frames in their spectacles, will, in nine cases out of ten, find that it arises from the spectacles not being placed on the face well, nor sufficiently close to the eye. The small glasses have the advantage of being less conspicuous when on the face than the larger ones; they have also a more light, aerial, and elegant appearance; they are more portable, and fit into a smaller case. A pair of spectacles, to fit easily on the head, should be supported by about $3\frac{1}{2}$ inches of the ends of the sides and the centre of the bridge, which should be the only points of contact with the head, and placed as close to the eyes as possible, care being taken to leave room enough for the eye-lashes to move without touching the glasses or frames. Any deviation from this method of fitting spectacle frames produces inconvenience to the wearer. It is requisite to be thus minute in what may be considered minor details, as a neglect of these little attentions produces much petty annoyance to the nervous and other spectacle wearers. In most cases the single jointed spectacles are best, and will be preferred, especially if the sides be half an inch or more longer than the front. These spectacles will be found to attach firm enough to the head for gentlemen to ride or even hunt with them, and are much less complicated than the double jointed spectacles, there being no extra joints to annoy by

becoming loose, &c.; and, which may be considered more important than all these considerations, there is no chance of their interfering with the arrangements of the hair, a point which I am sure will be duly appreciated by the younger portion of my readers. The glasses or pebbles should be perfectly transparent, finely polished, of equal size, focus, and substance, well ground and fitted into the frame, all roughness being ground off the edges before they are put into the frame, without flaw, speck, vein, scratch, air bubble, or any opacity whatever; and the thinner they are the better for the sight, as they admit the light more readily, care being taken that they are strong enough to bear wiping (which should be done with a piece of soft leather slightly rouged) or careful wear. The glasses or pebbles should be intently examined by a strong magnifying glass, and in a strong light, to detect their defects.

The wearer will soon perceive if the edges be rough, as when in the sun-shine, when near a candle, the fire, or any strong light, a halo of the brightest and most luminous fire will appear round the edges, dazzling to the wearer, and most prejudicial to his sight. The same appearance is visible in the anciently made single eye-glasses and spectacles, which the optician or jeweller formerly used to polish on the edges with a deep and broad edge. This error is now usually avoided; indeed, it is surprising that it ever should have been permitted, being so palpable and offensive to the sight.

To ascertain if glasses or pebbles be ground with spherical truth, they should be held towards the ground, and the image of any object which may be before the glass or pebble and the observer (as a candle, lamp, window-frame, or a house on the opposite side of the way) carefully examined

in all parts of the surface on either side of each glass or pebble. If this image appears perfectly distinct, well defined, and unbroken in its outline, when thus examined, the glass or pebble is good, and ground with sufficient spherical truth. Care should be taken that each surface of either glass be well examined, and that the image appears of the same size on the two sides of the glasses or pebbles next to the eye, and of the same size on the two sides of the glasses &c. from the eye. This examination is indispensable, as frequently, from negligence or ignorance, glasses of different foci or sights are fitted into the same pair of spectacles, which has a most embarrassing and prejudicial effect upon the sight.

The glasses should also be laid upon perfectly white paper, and then should not discolour it in the slightest degree. Those coloured spectacles used merely as shades from the light &c. are of course to be excepted from this test of their transparency. In placing spectacles upon the head, the sides should be pulled open by the ends till they are much wider apart than the width of the face, and then brought over the forehead, down to just above the ears, their best and most convenient position; and when taken off they are to be returned back in the same way. This mode of placing them on the head will prevent accident to the eyes of the wearer, or scratching his face.

The least complex, the most durable, and the best spectacle-cases are those made open at either end: they are not liable to injure the frames or the glasses of spectacles, and the wearer will have less trouble with these cases than with any others.

The antique tortoise-shell or shagreen spectacle-cases, as formerly made to fit spectacles, were so heavy that a porter in some cases would have been desirable to carry them for the over-laden wearer;

these cases, so heavy and cumbersome in the pocket, are liable to bend the modern light and elegant frames if not used with the greatest care. This is not likely to occur with the improved open end spectacle-cases, which are neatly lined with velvet, and yield to the shape of the most delicate spectacles; they are also much pleasanter to handle, being softer to the touch. These cases will be preferred by ladies, being extremely portable.

The cases of Indistinct Sight in which Spectacles may be used with advantage.

Near-sightedness arises from the eye being too convex or prominent, and is usually perceived in persons of a very early age; and when discovered, optical aid should be immediately resorted to. It is said that persons engaged in manufactures, or living in large cities, and unaccustomed to view very distant objects, are more subject to near-sightedness than others who are of a profession requiring out-door employment, as sailors, fishermen, and persons engaged in agricultural pursuits, and with the truth of this opinion, from the result of my experience, I am inclined to agree.

The near-sighted have usually a singular habit of half closing the eyes in looking at distant objects; this may slightly assist them, but they have still a very indistinct view. They are compelled to read, write, sew, or play music at a much closer distance from the eye than other persons. They see, perfectly unassisted, minute objects when placed close to the eye, as well or even better than distant-sighted persons see with the assistance of a powerful magnifying glass, or even with the assistance of a microscope.

The principal inconvenience attending near-sightedness is reading, writing, &c., at an inconveniently close distance, and not seeing, to recognise, an intimate friend in the street, in a church, a concert room, or in a theatre, and these persons are thus purblind at all long distances, and totally incapable of enjoying perfectly the beauties of landscape scenery, and thus lose one half of the pleasures of existence; indeed, some, when quite children, are too near-sighted to learn to read, or receive any education, without the constant use of spectacles, and are remarkable for holding a book within three or four inches from the eyes to distinguish the letters. The use of appropriate and accurately adjusted concave spectacles will give to such persons a delightfully distinct and perfect view of distant objects, and enable them to read, write, &c. at a proper, convenient, and usual distance, and for a longer time than without them, preventing the fatigue &c. experienced, especially at night. To the near-sighted the occasional use of concave spectacles of a proper sight will often supersede the necessity of using an eye-glass or opera-glass at the theatre, and will be found an indispensable and most agreeable companion in the promenade. They should be carried about the person at all times. How gratifying it must be to ladies and gentlemen thus situated, to be at once placed upon an equality, in point of sight, with those persons who see distinctly at all distances. How great this advantage derived from the use of appropriate concave spectacles! They have frequently, after being some time worn, enabled the wearer to dispense entirely with the use of spectacles.

Distant sighted persons find they are compelled to place a book, in reading, at a greater distance

than formerly from the eye, or they require a stronger light in reading or writing at night ; they see with difficulty to mend a pen, and have a general inconvenience in seeing objects at short distances, within one or two feet. They still see perfectly well at any distance in the open air, or in the street, nay, perhaps, can tell the hour by a church clock at a mile distance, without assistance from glasses ; and can see objects at that distance as well as ever they could. These persons thus situated are termed distant or long-sighted ; and the only certain remedy for this kind of vision is, the occasional use of convex spectacles, properly and with the greatest care adjusted to the sight ; they will for the time restore the sight to its pristine distance, and have, in many cases, enabled the wearer to leave off the use of spectacles even after the eye has been accustomed to them for eight or ten years.

To those persons who have any occupation requiring close and constant employment of the sight, at any distance nearer than two or three feet, and who complain of fatigue and a watering of the eyes at night, and on dark foggy days in winter,—spectacles of a slight convexity, called preservers, will enable them to see better and for a longer time than they can see without their use. Distant-sightedness does not usually exhibit itself so early in life as near-sightedness ; but the exact age at which it appears cannot be defined. The greater portion of those persons who have applied to me for convex spectacles have exceeded the age of 35 ; though, in one instance, I have known a boy of ten years of age require spectacles for reading, of five inches focus. He had not been operated upon for cataract, or any thing of the kind ; nor had he any disease of the eye. This is a very remarkable instance.

There are many persons who have not to complain of either distant or near-sightedness, who see perfectly well at all distances, but who experience great inconvenience from a glare of light at night, from the intense light and heat of the sun, especially as reflected from the London pavement, in summer, from the wind blowing strongly in their eyes, from the dust of macadamized and other roads, from the flies in summer, from a residence in hot climates, as the East or West Indies, from chalky soils, and from travelling over the immense tracts of snow in various parts of the world. Some of these and other causes produce inflammation of the eyes, and frequently, in severe cases, total blindness ensues ; which the judicious use of spectacle shades, made either of glass or wire gauze, might have contributed to prevent, and at so trifling an expense, not necessarily more than five shillings.—See list of prices.

The persons who usually require the aid of spectacles (excepting those afflicted with cataract, of whom more hereafter) have now been enumerated. It has been observed, that “ it is very much the fashion to wear spectacles of late, without absolute necessity.” Now I can assure the intelligent reader, that of a great number of spectacles that I have supplied to persons of every rank in society, few have been purchased merely from the fashion, nearly the whole of them having been absolutely required for purposes of vision. The younger members of the legal and medical professions are the only exceptions, to whom they have occasionally given the appearance of a sedate and becoming gravity, inducing a well-merited confidence in their professional abilities. There are few persons who do not, at some period of their existence, require our professional assistance ; it will, therefore, be pru-

dent to peruse carefully, and preserve for reference, this little pamphlet,—it is the result of my own experience, observations, and labours; it contains nought but facts—no plagiarisms, nor any assertions that cannot be maintained and corroborated by numerous opticians.

Of the Surfaces of Pebbles or Glasses for Spectacles.

There never was, and never will be, a glass or pebble fitted to spectacles, and suitable for purposes of vision, whose surface is not expressed by one of the three following terms — concave, convex, or parallel; it is therefore essential that the intelligent and enlightened reader should perfectly and familiarly understand these terms as applied to spectacle glasses or pebbles; and it will be my cheerful and willing task to endeavour to assist him in acquiring this knowledge. Glasses or pebbles concave on both sides are used in spectacles only by the near-sighted; glasses or pebbles convex on both sides are used only by the distant-sighted; and parallel glasses, or those which are perfectly flat on both sides, are used only as shades, and are usually coloured blue, azure, or green.

Concave or near-sighted glasses are frequently, and very indefinitely, distinguished by numbers, as, Nos. 1, 2, 3, &c. As these numbers vary with almost every optician, I must abandon these terms, and adopt the only fixed, definite, and universal term, of distinguishing them by the radius of the circle, of whose circumference their surfaces are a segment, which I shall more fully explain shortly. There are but 20 different kinds of near-sighted glasses required to suit properly any near-sighted

person ; and not one optician in twenty has more than twelve different kinds ready fitted up into spectacles ; indeed, twelve are enough to suit ninety-nine in a hundred cases of near-sightedness. This is a remarkable fact, the truth of which I can maintain from my own experience in spectacles ; and few persons have had more, having been connected, and absolutely engaged, in the business from a very early period.

Convex glasses for distant-sighted persons are usually, and very correctly, described by their radius, as 8, 10, or 12 inches focus ; and of these there are required a few more to suit every distant-sighted person, but not more than 30 ; and of these, 12 are only required for couched eyes, or for those persons who have been under the care of an oculist, and operated upon for cataract, &c. Convex glasses for spectacles are from 5 to 72 inches focus, and are worked or ground with tools of the following radius, thus :— 5, $5\frac{1}{2}$, 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 24, 30, 36, 48, and 72 inches focal distance ; that is, their surfaces are ground to the same curve as the surface of a globe—of 5 or $5\frac{1}{2}$ &c. inches radius, or half the diameter : this explanation will apply to all convex or concave glasses. The method of ascertaining the focus of a convex glass or pebble is by the sun's light, as a candle or other light does not produce the same focus ; thus, let the light from a window pass through the convex glass upon a sheet of white paper fixed upon the opposite side of the room, and exactly at the focal distance the image of whatever object is before the window, as the sun, a house, a chimney pot, or even the image of the frame of the window, will be observed inverted upon the paper, perfectly distinct, and well-defined ; this distance, correctly taken, is the true focus of the glass or pebble ; and this is the best method by which the

reader can try the focus of his convex glasses. All distant objects serve equally well, by this method, to ascertain the focus; and if the focal distance, thus taken, be sent to any optician, he will understand the sight, so as to send a glass to match exactly the glass by which the focus was ascertained. This simple and correct method of telling the radius or sight of a convex glass ought to be imprinted on the memory, as it may be very useful where a glass is broken in the spectacles, and no optician at hand to supply another, or where the other glass cannot be spared to get it matched, the optician residing at a long distance.

I should recommend all persons who are thus situated, or who are going abroad, to have a few pairs of extra glasses or pebbles fitted to their spectacles or eye-glasses. There will be no difficulty in taking out the glasses with a small screw-driver, (the screw being always to be easily found on the side of the joint of the spectacles: it has a small slit head,) and fitting in others which have previously been ground to fit exactly the same frames. This plan is very desirable, and not expensive, as the best convex glasses cost but one shilling each, and the best convex pebbles cost but three shillings each, from my establishment.

The radius or sight of the near sighted or concave glasses may be known very easily by the assistance of a convex glass of the same radius; thus place a convex and a concave glass together as one glass, in immediate contact; then hold them at arm's length and look at some distant object through them: if upon a slight motion the object seen through the two glasses then placed in contact appears to move or shake, the two are not of the same radius, and another convex glass must be tried, till the object, as seen through the two glasses, is of the natural size, that is, neither magnified nor di-

minished, and has the exact appearance of looking through the window, or through a piece of plain glass. When this appearance through the two glasses takes place, and the object appears fixed and stationary when the two glasses are in slight motion, they are then both of the same radius, and ground with tools of the same radius, concave or convex. To ascertain the radius of concave glasses by this method, it will be necessary to have a variety of convex glasses, or a *trial case* as it is called, which is to be obtained in the shop of any optician in London, and of most jewellers, watchmakers, &c. in provincial towns. There are several other methods of ascertaining the radius of concave glasses : one is by the image of the sun as reflected back from the surface upon a very small piece of paper, much smaller than the size of the concave glass ; but as this and the other methods will be difficult to those persons who are not experienced in optics, I must decline entering into them here, as I do not write for those conversant with the science.

The only concave glasses that I have required in the course of my practice, and I have never yet failed in suiting, accurately, every near sighted person who has applied to me, are of the following radii— $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5, $5\frac{1}{2}$, 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 24, and 30 inches, and one of these radii will be found uniformly successful in assisting cases of near-sightedness. It would be advisable for persons who are much engaged in reading, writing, or other sedentary pursuits, to have several pairs of spectacles, and of different foci, so that they may have spectacles suitable for reading either very large or very small print, or for pen-mending, or for seeing distinctly other objects of various degrees of minuteness ; this will be found a great relief to eyes accustomed to examine

for a long time, and with great attention, very minute objects. Engravers who are accustomed to use only one glass, from two to five inches focus, would derive more assistance from the use of a pair of spectacles of a much less convexity, and would not injure their eyes, to which the use of a single eye-glass of so great a magnifying power most certainly has a tendency. Persons to whom the expence of several pairs of spectacles would be an obstacle could have extra glasses, to be fitted into one frame when desired. This could be very easily done in a frame made expressly for that purpose. Periscopic glasses for spectacles were introduced by a very celebrated man; a patent was taken out for the invention, and, for a time, great numbers were made and sold. Since the patent has expired, they have fallen into comparative disuse. I and many other opticians never could discover any advantage that they possess over the usual double concave or double convex spectacles, that is, spectacles with both sides of the glasses concave, or both sides convex.

The periscopic glasses or pebbles, on the contrary, are always concave on the side placed next to the eye, and convex on that side which is placed from the eye, when the spectacles are on the face, and never have both sides of the glasses or pebbles of the same curve or radius, as, if that were the case, the appearance on looking through them would be exactly the same as on looking through a watch-glass, and they would neither magnify nor diminish. It is the inequality of the inside concavity to the outside convexity that gives the periscopic glasses their sight or focus, and their adaptation to near or distant sights, and which in convex periscopic glasses or pebbles may be measured with the sun's light, as before described, or by comparison with a convex glass.

Parallel glasses neither magnify nor diminish the object ; both sides being perfectly flat, and their surfaces equi-distant in every part, they produce the same appearance as on looking through a piece of plate or common window glass ; they can be of no assistance to the sight, and are used only to shade the eyes or to protect them from the light, &c., and are usually worn of a blue colour, which is the best. They may be very useful when made of glass, coloured or plain, or of pebble, to keep off the sand, dust, or flies, in travelling.

I have now described all the kinds of spectacle glasses or pebbles that are essential to restore, preserve, assist, or protect the sight, and should any person assert that he has discovered any other or better material for assisting defective vision, he may very safely be contradicted, and ought to be treated as an impostor. The acme of perfection in the production of spectacles to restore, assist, preserve, or protect the sight, both with regard to the material of the frame and the sight of the glass and pebble, has long since been attained, and it is quite impossible for the inventive genius of man to improve and perfect spectacles for purposes of vision : this being already effected, and every thing known of spectacles, and their uses to man in assisting &c. his imperfect vision. However erroneous this assertion may *appear*, it is *correct*, the business of an optician or spectacle maker being as purely mechanical as that of a boot or shoe maker, when he has got his leather before him ready to work ; indeed, there is an optician of extensive business, now in London, who for many years made boots and shoes with his own hands, and also another very eminent optician who was originally a draper, and another who kept a public house, which are facts well known ; and there are several others that I could mention

who have changed their original and proper trades for that of an optician, induced, perhaps, by the prospect of greater profits, a profession of greater apparent respectability, and the facility afforded them for this object by the business of an optician being at the present day so mechanical.

It is the great men of other generations who have made the most important discoveries in optics, and left the opticians of the present day little more to do than to manufacture from their inventions.

I know of but one invention that is really important in optics since that of the achromatic telescope, &c.,—I allude to the camera lucida, a most clever and useful little instrument. The kaleidoscope was a mere toy—a nine days' wonder of little use. It will of course be understood that I confine my observations solely to the science of optics, for in other sciences and the arts most stupendous discoveries have emanated from the most brilliant genius in our time, such as the application of steam power, &c. &c. These remarks are solely intended to excite the torpid attention of the public to the impositions and quackery of impostors and venders of spectacles, who deceive the unwary by stating that they have discovered some new and very superior material for assisting the sight in spectacles, which is well known to be impossible.

Of Pebbles and Glasses for Spectacles.

CRYSTAL or pebble is a very beautiful stone, transparent as the finest flint, or any other glass: it is generally called Brazilian Pebble, and is imported from the Brazils, where it is found in great quantities. A popular error exists that some of the pebbles used in spectacles are brought from Scotland: there never was a piece of pebble brought from, and a

native of Scotland, that could be used for spectacles, not being sufficiently transparent. Brazilian pebble is brought from the interior of the country, some hundreds of miles, at a great expence, to the sea shore, and thence to this country. Only a very small portion of it can be used for spectacles, as it contains so many little imperfections like feathers or hairs. Some of it has a smoky or cloudy appearance, and is not transparent enough for spectacles. When the very best is selected, suitable for spectacles, an operation requiring the greatest care, and occupying a considerable portion of time, it is sent to the lapidary to be slit or cut into little pieces, called slabs, about the size of a spectacle glass. This slitting of the pebble can only be accomplished by the aid of diamond dust, the pebble being so extremely hard that nothing else will cut it so well. A small soft iron circular saw is used, about nine inches in diameter, which is fixed horizontally in a lathe, and then rubbed or charged with the diamond dust, and lubricated with oil. The diamond used is the smaller pieces broken off the large diamonds and pulverized in a hardened steel mortar, made to fit the pestle exactly, which is three or four inches long, cylindrical, and half an inch in diameter. The slabs thus cut off are then given to the optical grinder, who grinds them twelve or fourteen pieces together in a brass or iron dish of the required concavity or convexity, with emery and water only;—this is a work of considerable time;—they are then polished on a brass or iron tool of the same curve, covered with a very strong woollen coarse cloth, water and putty,—a powder well known, and sold at the tool shops, only being used in this operation. They are now ready to fit into the spectacle frames, which is done by shivering or breaking the edges, with a small pair of snippers or plyers, to the shape of the frame, and then grinding them on the edges

with a rough grindstone to fit the frame exactly, care being taken that all roughness is ground off the edges. That all this is attended with great fatigue and labour, I need not remind the intelligent reader; and the use of diamond dust renders the operation one of great expence. Pebbles have a great advantage when compared with glasses: they are so much harder that they will scratch glasses so deep as to resemble the cut of a diamond, and pebbles do not scratch by continual wear or wiping as the glasses do; for this reason they are invaluable in spectacles that are likely to be used roughly or without a case, as the dust or grit gives glasses, after a short wear, the appearance of being ground on the surfaces, or semi-transparent, especially towards the centres of those that are very convex. Pebbles can also be ground thinner than glasses with impunity, as they are less liable to be broken,—a very great advantage in pebbles. In other respects, I believe the best glasses may answer the purposes of vision equally as well.

There are several methods of distinguishing glasses from pebbles, though they have so strong a resemblance as not to be easily distinguished on looking at them, even by the most experienced opticians.

Pebbles are invariably either colourless or of a yellowish brown tint. The best pebbles will not discolour the whitest paper when laid upon it.

Glasses, on the contrary, when they are not of the best white flint glass, have a greenish hue, easily detected on viewing them obliquely towards the light, or laying them on perfectly white paper.

It may be as well here to observe, that spectacles made of the best white flint glass, though they answer the purposes of vision extremely well, yet they are very soft, easily scratched, and very liable to be broken.

If a glass be taken in one hand, and a pebble in the other, and placed alternately and quickly in contact with the end or tip of the tongue, the pebble will be found much colder than the glass ; care being taken that it is not previously heated by being carried in the pocket, held for a long time in the hand, or placed near the fire, or in the sun-shine. But the most certain method of distinguishing them, is to take them out of the spectacle frame, by means of the small screw-driver before mentioned, and alternately to grind them quickly on a small grind-stone, or they may be rubbed briskly by the hand on a piece of stone : the pebble will be found to emit a brilliant light, and to grind away very slowly, while the glass will grind away very rapidly, and will not be at all illuminated. The same difference between the hardness of pebbles and glasses is perceived on rubbing a file over them.

The very best glass for spectacles and other optical uses, as for telescopes, opera glasses, microscopes, prisms, &c., is imported from Germany, where it is made better—in larger quantities—and is fused or melted in a superior manner, and then slit or broken, and the centre of the block of glass, which is considered the best, is sent over to England for the optician's use. This glass is of a more equal density, is freer from specks, air bubbles, veins or streaks, than the English made glass, being prepared with more care, and expressly for optical purposes ; this will be readily admitted by all telescope makers ; and this glass is invaluable to them in producing the best and largest object glasses.

The fact is not generally known, that there is not in England a glass-house expressly for the manufacture of optical glasses, and that opticians are compelled to take the best of the broken pieces of the plate glass made at Sunderland and other places

that they can select, and two or three men are employed to go round to all the plate-glass warehouses to purchase their broken pieces, or *cullet*, at so much per hundred weight, and the best of this is selected (and sometimes it is used indiscriminately) and ground and polished for spectacle glasses. Many telescopes are made of the bottoms of broken glass tumblers and the knots of window glass, which I believe are so well known as not to require any description. Occasionally two or three spirited opticians club together for a *pot of metal*, that is, have glass made at the glass-houses expressly for their own use; this is, however, very seldom done, as the expense is so great. I have entertained the idea of erecting a glass-house expressly for the manufacture of optical glass: it is very much wanted in this country; and were I to meet with an intelligent man, conversant with glass making, and who could devote more time to such an undertaking than I can spare from my profession, I would very soon commence operations.

When I fitted up the Cosmorama, at the Queen's Bazaar in Oxford-street, with the Cosmorama glasses, I had the greatest difficulty in obtaining the proper glass of a sufficient thickness, which was above half an inch, and at length obtained it from a Sunderland manufacturer, who has a warehouse in Thames-street, whom I induced to spare me some pieces of thick plate glass which were intended for cabin windows in the Royal Navy, and for which he had the contract. I have since learned that I could have obtained them very readily from Paris and other parts of the Continent.

There is at the present time a great quantity of spectacle glasses made at Birmingham, Sheffield, and some few in London, I believe in the neighbourhood of Hackney, by mills, moved by Water, Steam, &c. &c. This method of grinding and

polishing spectacle glasses, when first adopted, produced a strenuous opposition from the London opticians. The glasses thus made were for a time considered as not ground to so great a degree of spherical truth as the glasses ground and polished by the primitive method, that is, with tools guided and propelled by the hands.

There are now very few spectacle glasses that are hand-worked, and I must confess that I never could discover any material difference between the best of the glasses or pebbles that are ground by the mills and the best of those that are ground by the hand; indeed, the only difference in the appearance of the two is, that the edges of the mill-worked are red, and the edges of the hand-worked are white; this arises from the difference of the material (or putty) with which they are polished, and this difference is not at all perceived after they are ground into the frames. More care is however necessary in polishing the mill-ground eyes, as if they are over-polished, which may be done with the slightest inattention or carelessness, the figure or spherical truth will be destroyed. This, however, very seldom occurs with the mill-ground eyes now, the workmen being so proficient. It is astonishing the immense quantity of spectacle glasses and spectacle frames that have been exported, particularly to America. Birmingham and Sheffield alone have produced, and that not at a very distant period, sufficient spectacle glasses to supply the United Kingdom, the East and West Indies, and America in both hemispheres. I have seen with regret many of our best workmen emigrate to America; and at the present time, at New York, Philadelphia, Baltimore, and other places in the United States, they know as much about making spectacles and spectacle glasses as we do; and a greatly decreased demand for those of our manufacture has

been the consequence. I have observed some spectacle glasses vended in the streets of London, by hawkers; the frames are made of horn or brass, and the glasses of common window glass, ground and polished on one side, to give them something like a focus, and the other side left plain, and covered with veins, specks, and as green as grass. These choice specimens of glass grinding do not cost from the glass grinder above twelve or fourteen shillings the gross, of 144 pairs, and are not only useless to restore, assist, or preserve the sight, but are absolutely prejudicial, and have very injurious consequences; indeed, they should be legislated against, not the poor fellow who vends them, but the maker. There is as great a necessity for legislative enactments in cases of this sort as there is to prevent the brewer or baker from using deleterious compounds in his trade.

The best glasses, adapted and properly selected for the purposes of vision, cannot be sold for less than one shilling each, ground and fitted into the frames; and when vendors offer to sell them at a less price, they will seldom be found to stand the tests as to their good quality suggested at page 7.

Of Coloured Glasses and Wire Gauze Shades for Spectacles.

A LIGHT blue or azure coloured glass is to be preferred for shading the eyes from light, &c., as the complexion of a person is seen through a blue glass of its natural colour, rather darkened; and through a green glass the countenance has a cadaverous hue. Colours are also more easily distinguished by blue glasses than with green, and the blue answers every purpose of shading or protecting the eyes from a glare of light, &c., better than green.

Blue glasses may be obtained of as dark a shade

as may be desired, almost to opacity. In most cases a very light blue, of a similar tint to the sky on a bright day, is to be preferred to all others; and as these glasses admit of being ground concave or convex to suit the sight, in the same way that other glasses or pebbles are ground, they will be used with great advantage by the near or distant-sighted, who may require some shade or protection from a glare of light, especially in cases of recovery from inflammation of the eyes; they are in these cases usually recommended by the oculist or medical gentleman.

Blue glasses of a very dark shade are sometimes used as spectacles to screen the loss of an eye from observation; and, if skilfully and closely fitted, they effect this desirable object completely, so as, at a small distance, to deceive the inquisitive glance of the most acute observer.

Wire gauze is sometimes used for the same purpose. This gauze has been introduced of late for spectacle shades, and is very finely wove—being iron or steel wire wove forty or fifty wires to the inch, and japanned of a light blue colour; this has entirely superseded the use of crape for the purpose of shading the eyes from the light, and is found to answer this purpose much better. This gauze is very useful in keeping off the dust or flies in summer, which it does effectually, and at the same time admits a current of air to the eyes, which in some cases is very desirable, and is an advantage that glasses do not possess.

The best shape for these shades is parabolic or horse shoe; and there should be side shades of the same material, to be worn on the temples when opened, or by closing them the gauze may be worn double, thus increasing the protection for the eyes. The frames of the wire gauze shades should be of elastic blue steel; these are the

lightest, the cheapest, attach most firmly to the head, and are consequently the best. All the sorts of spectacle glasses that are really useful have now been described; and it has also been explained, that it is only by the curve of the surface that glasses or pebbles can at all assist or preserve the sight, and that all spectacles are either convex, concave, or parallel—periscopic being included in the two former. Ladies and gentlemen would do well to consider of this simple fact; and, by ascertaining the focus of the glasses, and inspecting the frames, in the way I have before described, they will have no difficulty in detecting the impudent audacity of those who, for interested purposes, would mystify and throw an obscurity over this simple, but transcendently important subject, and who would assert, that there is a peculiarity, advantageous to the sight, in the glasses of the spectacles they offer for inspection.

Double and Single Eye-glasses compared.

EYE-GLASSES are frequently used instead of spectacles, being less formal, and more convenient for occasional purposes,—in reading a letter, viewing goods in a shop window, or in examining any object, near or distant, as the case may be. Single eye-glasses have, till lately, been more generally used than double eye-glasses. At the present time the double are rapidly superseding the use of the single eye-glasses, and for these obvious reasons:—Persons who are provided with two eyes see better and more objects with both eyes than with one; and they also see better and more objects with a double than with a single eye-glass. Single eye-glasses have also a tendency

to weaken one eye, as the wearer, from habit, will apply the glass more to one eye than to the other, which frequently produces what is termed *obliquity of vision*. The wearer of a double eye-glass will see better, for a longer time, and with more pleasure to himself, than he can see with a single eye-glass; he will also have the advantage of using both hands if required, as the double eye-glass will fix on the nose by slightly pressing the glasses nearer to each other. This advantage he cannot have with the single eye-glass, unless he can shrink up the flesh round the eye, to support the eye-glass by its contraction. This dexterous feat I have seen performed by some gentlemen; it is an unsightly practice, and in this opinion I anticipate the ladies will coincide. Independent of all these considerations, the double eye-glass has a more uniform appearance, and when closed, has the appearance of a single eye-glass, and is very portable. When the double eye-glass is closed, one glass being upon the other, the concavity or diminishing power, or the convex or magnifying power, is very much increased: this also is a great advantage over the single glasses, and will be found very useful. Our most gracious Queen invariably wears a double eye-glass.

In all cases where the assistance of glasses are required for a short time only, I would recommend the use of the double eye-glasses, instead of the spectacles, with sides to fasten on the face.

English made spectacles are admitted, even by foreigners, to be the best that are made in any part of the world. As a proof of this, many foreigners, who have very good workmen in their own country, send to London for their spectacles. The late Emperor Alexander, of Russia, had his spectacles made by a London maker, who resided, till very

lately, in Kirby Street, Hatton Garden ; they were of tortoise-shell, and ordered expressly, by his Imperial Majesty, of a very light red or foxy colour, such as in this country would be considered very inferior, and of 14 inches concave radius.

I have had the honour of making spectacles for his late Majesty, George IV , not by his Majesty's especial command, but by order of one of his Majesty's opticians ; and in the same manner for other members of his Majesty's illustrious and royal family.

*Of taking a pair of spectacles from an optician's shop,
and ordering a pair from the maker.*

THIS is an affair of greater moment than some persons imagine, requiring due preparation and deliberation. After perhaps a long walk on a sultry day, the eye is not sufficiently cool and steady to select a pair of spectacles with the requisite judgment and discretion. The wearer being warm, a condensation or steam pervades the surface of the glasses, and, for a time, they are totally useless, —and glasses of every sight have the same misty appearance. This obstacle may be surmounted by taking a short rest. Many persons on these occasions take a book of the smallest print they can obtain, with the idea of this being the best test of the goodness or magnifying power of the spectacles ; —this is an error, as to read so very small a print they require glasses of a much greater power than would be requisite to read a newspaper, or any common sized printed book ; and having thus injudiciously selected glasses of too great a magnifying power, when they try them at home leisurely mistiness and unpleasant sensations are the result of the use of these too powerful spectacles. It may be taken as a general rule that whatever sized

objects spectacles may be required to render distinct to the wearer, on objects of that size should the trial be made. When purchasing the spectacles, an attention to this will save much unnecessary trouble both to the wearer and to the optician.

Another very material consideration in the choice of spectacles is, the *distance* from the eyes to the object that it is required to be seen distinctly ; thus in selecting spectacles for reading, the trial should be made at a distance of from twelve to eighteen inches from the eyes ; in taking them for writing, nearly the same distance ; to derive assistance in playing music, at a greater distance ; and in the choice of spectacles to assist the sight in walking, views of distant objects only should be taken. It is this adjustment of the sight in spectacles to objects at certain distances that renders it imperative in many persons to have several pairs of spectacles, that they may be suited at any required distance.

Artizans, in selecting spectacles, should be very careful in ascertaining the various distances at which they may require their assistance. This suggestion, if properly attended to, will very much facilitate the choice of suitable spectacles.

Half an hour appropriated to the selection of spectacles will not be time mis-spent, as the frames are to be examined as to their fitting properly the head, and the exactly-fitting case selected, as well as a considerable time bestowed upon ascertaining the sight of the glasses ; and no optician, however great his natural genius, or acquired skill, can be half so good a judge of all these matters, as the intelligent wearer himself.

In sending for spectacles from a maker, the width of the face, taken across the temples, should be sent to him ; also the shape or height of the nose across the eyes, and the distance

between the pupils or centres of the eyes ; these will be ample directions to guide him in the shape of the frames of the spectacles, of whatever material they may be required to be made. As to the sight, the person can ascertain if he be near or distant sighted by the directions given at pages 8—10. He should send all the particulars of the distance of objects that he sees distinctly, and of the distance of those objects that he does not see distinctly. I mean, of course, without the use of spectacles ; if they have been worn, one of the glasses, or the spectacles themselves, should be sent, and the kind of assistance that they afford to the wearer fully described. The age of the person is not essential, and a very popular error prevails upon this subject. The fact is, that sight, in persons of the same age, is very frequently as different as the features. In some cases it will be necessary to have a few pairs of spectacles, or unset spectacle glasses, sent for selection ; or what is called a trial case may answer the purpose as well ; that is, a case made of horn or tortoise-shell, and containing twelve or more spectacle fronts, with the glasses fitted ; they are very useful in these cases, and should be kept a few days, and repeatedly tried, that a correct and suitable selection may be made. If all these particulars be attended to, and the optician be master of his profession, the person will most assuredly be suited with a good and appropriate pair of spectacles.

The equitable prices of spectacles, double eye-glasses, &c.

I HAVE frequently been informed of the barefaced impositions practised upon the public by dealers

in spectacles who travel from one town to another ; as they are not residents, their character not known, and the inhabitants not having a work of this description for reference to assist them in detecting the impostors, they usually contrive to dispose of their spurious wares at a price infinitely above their value. In several instances eight and ten guineas have been realized for gold spectacles, the utmost value of which did not exceed forty shillings. Two and three guineas have been charged for silver spectacles, the value of which were not above sixteen shillings. In one instance, in Bristol, two guineas were obtained for blued iron spectacles, worth about three shillings and sixpence. These brazen impostors deliver an eloquent discourse upon the miraculous powers of their wonderful spectacles ; they dilate upon the virtues of their patent, vegetable glass, amber, and other extraordinary spectacles, whose virtues are to preserve the astonished auditors from partial or even total blindness. I am now more particularly describing the itinerant dealers, who occasionally migrate from the vicinity of Petticoat Lane or Duke's Place, to the various watering and other fashionable places of resort in the kingdom.

And it is matter for surprise, that some respectable London optician has not long before this time endeavoured to "awaken the attention of the public" to these impositions, which have been practised by several persons, for a long period of time, to a very great extent, and with uniform success, and thus have relieved me from the performance of this necessary, imperative, and rather unpleasant duty. The arrival of these impostors is usually announced by a "Leader" in the provincial paper, (obtained, doubtless, by a well-timed present of a five or ten-pound note,) and the *immense* advantages

to the purblind attending an early application for the impostor's spectacles fully detailed. This system has been so dexterously managed, and to such an extent, that many thousands of pounds have been thus realized, to the great injury of the resident and respectable optician or spectacle vender. This extortionate system is not exactly confined to the provincial towns : in one instance in London I had made a pair of gold spectacles for a shopkeeper, and for which my charge was 1*l.* 16*s.*; when I took them home, I had the astonishment to see the shopkeeper paid 9*l.* 9*s.* for them, by the wearer, who had accidentally called, and was in the shop when I went in. Many an industrious artizan, purblind from the effects of age and incessant application at his labour, has been deprived of a whole week's wages to pay for a pair of spectacles, for which one day's pay ought to have been more than sufficient. It is a practical knowledge of these facts that has induced me to publish these prices ; and the public are immense gainers by individuals who thus step forward, amidst a shower of ill-will and remonstrance, to ameliorate a flagrant and extensive evil. Political economists will see the justice, and advocate the truth, of this position. I believe, in presenting the following prices, I am equally just to the maker and to the wearer.

Prices of Spectacles per pair.

	£	s.	d.
Gold spectacles with concave pebbles	2	4	0
Gold spectacles with convex pebbles	2	2	0
Gold spectacles with concave glasses	1	19	0
Gold spectacles with convex glasses	1	18	0
Silver gilt spectacles with concave pebbles.....	1	3	0
Silver gilt spectacles with convex pebbles.....	1	1	0
Silver gilt spectacles with concave glasses.....	0	18	0
Silver gilt spectacles with convex glasses	0	17	0
Silver spectacles with concave pebbles.....	0	18	0

	£	s.	d.
Silver spectacles with convex pebbles	0	16	0
Silver spectacles with concave glasses	0	13	0
Silver spectacles with convex glasses	0	12	0
Elastic blue steel spectacles with concave pebbles ..	0	16	0
Elastic blue steel spectacles with convex pebbles ..	0	14	0
Elastic blue steel spectacles with concave glasses ..	0	11	0
Elastic blue steel spectacles with convex glasses	0	10	0
Tortoise-shell spectacles with concave pebbles	0	16	0
Tortoise-shell spectacles with convex pebbles	0	14	0
Tortoise-shell spectacles with concave glasses	0	9	0
Tortoise-shell spectacles with convex glasses	0	8	0
Strong steel spectacles for artizans with concave pebbles,	0	9	6
Strong steel spectacles for artizans with convex pebbles,	0	7	6
Strong steel spectacles for artizans with concave glasses,	0	4	6
Strong steel spectacles for artizans with convex glasses,	0	3	6
A pair of concave pebbles fitted to frames	0	8	0
A pair of convex pebbles fitted to frames	0	6	0
A pair of concave glasses fitted to frames	0	3	0
A pair of convex glasses fitted to frames	0	2	0
A pair of blue, green, or wire gauze shades fitted to spectacle frames	0	3	0
A spectacle case	0	1	0
Spectacle shades, parabolic or horse-shoe shape, with side shades, and blue or green glasses, or wire gauze, and silver frames	1	1	0
Spectacle shades, parabolic or horse-shoe shape, with side shades, blue or green glasses, or wire gauze, and elastic blue steel frames, from 10s 6d to	1	0	0
Traveller's plain shades, oval or round, coloured glasses or wire gauze, and strong steel frames ..	0	5	0
Cataract spectacles, as recommended by the most eminent oculists, for persons who have undergone the operation of couching, in steel frames, from	0	5	0
Spectacles to correct a cast in the eye, or squinting, in children	0	7	6

Prices per pair of Double Eye-glasses.

Gold double eye-glasses with concave pebbles	2	12	0
Gold double eye-glasses with convex pebbles	2	10	0
Gold double eye-glasses with concave glasses	2	7	0
Gold double eye-glasses with convex glasses	2	6	0
Silver gilt double-eye-glasses with concave pebbles ..	1	7	0
Silver gilt double eye-glasses with convex pebbles ..	1	5	0
Silver gilt double eye-glasses with concave glasses ..	1	3	0

	£	s.	d.
Silver gilt double eye-glasses with convex glasses ..	1	1	0
Silver double eye-glasses with concave pebbles	1	2	0
Silver double eye-glasses with convex pebbles.....	1	0	0
Silver double eye-glasses with concave glasses	0	17	0
Silver double eye-glasses with convex glasses.....	0	16	0
Elastic bluesteel double eye-glasses with concave pebbles	0	16	0
Elastic blue steel double eye-glasses with convex pebbles	0	14	0
Elastic blue steel double eye-glasses with concave glasses	0	11	0
Elastic blue steel double eye-glasses with convex glasses	0	10	0
Tortoise-shell double eye-glasses with concave pebbles	0	14	0
Tortoise-shell double eye-glasses with convex pebbles	0	12	0
Tortoise-shell double eye-glasses with concave glasses	0	9	0
Tortoise-shell double eye-glasses with convex glasses	0	8	0

These are exchanged within one month if required. Telescopes, microscopes, opera glasses, barometers, thermometers, quadrants, sextants, drawing instruments, globes, &c. &c., at prices proportioned with those above stated.

Of Shaded Lights for Reading.

PERSONS who are much accustomed to reading or writing at night should use a light that is shaded ; this will be found a great relief to the sight, as it diffuses the light more equally and uniformly over the paper, and intercepts the glare of the flame from the eyes. Lights on the Argand principle are the best : they burn steadier than all others. The unsteady light of a candle, independent of the inconvenience of its requiring snuffing, is a strong objection to its being used at night, either in the drawing-room, the library, or the counting-house. All lights used at night for reading, writing, or any other purposes requiring close application of the sight at close distances, should, by every contrivance, be assimilated as much as possible to the uniformity of day-light ; and nothing effects this object better than lights on the Argand principle,

and shaded or softened by ground glass as the Cinnabra lamps are. The inventor of ground glasses merits the thanks of the public ; his improvement has, in a great measure, destroyed the mischievous effects of the dazzling glare of gas-light, at the same time retaining all its advantages of brilliancy and economy. These improvements, with the assistance of the light blue glass spectacles, enable the reader to continue his enjoyment of a literary banquet for hours at night, without the least fatigue or uneasy sensation in the eyes. How luxurious our times appear, when compared with the age of horn lamps and the curfew !

Of Oculists, and of Opticians.

AN *oculist* is an eye surgeon, and is to be consulted in cases of inflammation, of accident, or of opacity in the sight ; and his duty is to perform any operation required upon the eye, or to prescribe the proper remedies, by lotions and medicines, &c., and in these and similar cases to decide upon the necessity of wearing spectacles.

It has become the fashion of late to unite the professions of aurist and oculist,—how far this can be done with success I will not attempt to decide, but of this I am aware, that it will require the undivided attention of any man to excel in a knowledge of the theory and practice of diseases of the eye, its physiology and pathology. I would as soon believe (and, indeed, should not be surprised to see announced) that one individual can unite with complete success the professions of aurist, oculist, optician, spectacle maker, and veterinary surgeon, which is actually impossible. It is a subject for regret that talented men should thus divide and weaken their energies ; this union of the two pro-

fessions must excite the risibility of the profession generally. An *optician* has to suit or fit the eye very accurately with spectacles to give distinct vision at the required distance, and, as contra-distinguished from an *oculist* or *eye surgeon*, might not inaptly be designated an *eye tailor*; indeed, like a tailor, he works with a rule and snippers (a little instrument used to break the edges of spectacle glasses to the shape of the frames, and resembling very closely a pair of scissors), and suits the sight and fits the head with spectacles, which, like a garment, are to be put on and taken off. These few observations will serve to shew persons who have any thing the matter with their eyes, whether they require the assistance of the oculist or of the optician.

Of Squinting in Children.

SQUINTING in children, or obliquity of the eyes, is so well known, that I shall not here attempt to describe it; it is, in ninety-nine cases of a hundred, to be perfectly cured by the use of goggles, or spectacles fitted to the face, with some opaque substance instead of glasses, and a small hole perforated through their centres. These spectacles may be made of any of the usual materials: blue steel, perhaps, is the best; and they must be properly fitted to the face of the child. Into these frames are placed, instead of the usual glasses or pebbles, pieces of ivory or bone stained jet black, and holes drilled in the centres, rather larger than the pupils of the child's eyes, and of the same distance apart. A quarter of an inch is large enough to make the holes. When these spectacles are on the child, he must bring his eyes to their proper parallel position, or he cannot see at all; this

he soon learns to do ; and if the spectacles be kept on close and constantly to the eyes,—if they are put on the first thing in the morning, and only taken off at night, (except at meal times,) for a few weeks or little more, a perfect cure will be effected. The price of these useful spectacles is only *7s. 6d.*

Of Opera Glasses.

It has been before stated that London made spectacles are the best that are made in any part of the globe. And it must, at the same time, be admitted, that the French excel us in the manufacture of opera glasses as much as we excel them in the manufacture of spectacles. They have the honour of having first introduced the double opera glasses. French made opera glasses, for excellence of the glasses, for beauty of design in the mountings, and (an important consideration in the eyes of the purchaser) for moderation in price, are never surpassed, and seldom equalled. Ladies and gentlemen who have visited Paris will admit the truth of this. Certainly the opera glasses made in England are much stronger ; being heavier mounted, they are much more durable ; but then they are more than double the price. The double or binocular opera glasses are very superior to the single opera glasses, for the very same reasons that the double eye-glasses are superior to those that are only single, as before explained.

The number of French made opera glasses that are imported into this country is very great ; they are to be found in almost every optician's or jeweller's shop throughout Great Britain ; and they catch the eye in almost every street in London. Great precaution is, however, requisite in making a

purchase, as very many are sent here utterly useless for any purpose of vision; being a sort of spurious imitation, manufactured, like the Jew's razors, for sale only.

French made opera glasses have usually a French name or direction stamped round the outside of the rim containing the eye-glass, or glass that is placed nearest to the eye in using. This is very frequently replaced by a rim made in this country, and without any name at all; this has been done to sell the glass as of English manufacture, many patriotic ladies and gentlemen objecting to an opera glass of foreign manufacture. The encouragement of foreign manufactured goods, some very eminent political economists will tell us, is of advantage to this country, as it offers an inducement to foreigners in taking our goods in exchange; and when we supply them at as cheap a rate as they supply us, no doubt this is the case. A capital double, French made opera glass, very superior glasses, elegantly mounted in mother o' pearl, and richly gilt, in a handsome red case, may be purchased for 1*l.* 10*s.* A similar glass of English manufacture would cost above three guineas. It is remarkable that our English opera glass makers do not attempt something like a competition, as to price and elegance, with the French manufacturer; this however, at present, has not been attempted.

Opera glasses are made of various degrees of magnifying power; with those of a very high power, the person or object looked at appears dark and indistinct, unless well lighted or illuminated. To try this, let a person who has a glass of very great power examine the face of a person on the stage of a theatre, and close to the stage lamps, and then let him examine the features of a person at the back of the stage, or in the back part of a

box ; he will perceive the features that are well-illuminated very distinctly, and those that are not so he will hardly see at all. Many an excellent opera glass of great power has been condemned as useless by persons not cognizant of this fact. With glasses of a moderate power, a larger field of view is obtained,—that is, more objects are seen at one time ; and though they are not so highly magnified as to examine the *teeth* or the *eyes* of the person looked at as to colour, they are much easier and pleasanter to use. Long or distant-sighted persons can generally see very well with opera glasses as they are usually made, by accurately adjusting them to the proper focus ; and the best method of doing this, is to draw the tubes out to their full extent, and then place the glass to the eye ; the tubes are now to be gradually closed, with a spiral or winding motion like a screw, not pushed in straight ; this method will regulate the motion, and ascertain the focus exactly as required, and better than any other way. Near-sighted persons, requiring the occasional use of spectacles that are *very* concave, will not see at all with one opera glass in an hundred as they are usually made. It will be requisite for them to have an opera glass fitted with glasses expressly to suit the sight ; to do this it will be indispensable for the optician to know the radius or concavity of the glasses they use, to make a *single* opera glass to suit the sight ; and if a *double* opera glass be desired, he must also know the distance between the pupils of the person's eyes ; so that the centres of each opera glass and the pupils of the eyes coincide, or are in the same axis. Distinct vision cannot be obtained if this is not the case. The operas of a binocular opera glass should also be exactly parallel, or a double image will be seen. This appearance is often exhibited by a binocular or double opera glass after a fall or other accident, and the wearer is puzzled to know

how it is that he sees objects double in looking through his glass, and that he does not see with it as he did formerly; this singular appearance arises from the axis of the glass of each opera glass not being exactly parallel, and the fault, whenever it occurs, can be repaired by any optician at a trifling cost. The regulating screw of a binocular opera glass, which is usually placed midway, or in the centre between the operas, will sometimes act more upon one opera than upon the other; in this case the focus of one opera will be attained before the other, and a misty, cloudy appearance is the result; this can also be repaired at a small expence.

In selecting a binocular opera glass, care should be taken that the distance between the axis or centres of each opera exactly corresponds to the distance between the pupils of the wearer's eyes. If all these observations be attended to, a suitable glass, delightful to use, and a most useful companion at the theatre, will be obtained. I am near-sighted, wearing concave glasses of eighteen inches radius always in the street; and at a distance of thirty yards, I could not, without their assistance, see to recognise my most intimate friend. I have often experienced great annoyance at the theatre from having forgot my spectacles or my opera glass. This suggested to me the idea of a depôt of concave spectacles and opera glasses at the principal theatres, for sale or hire nightly, and that it might possibly meet with the approbation and encouragement of many frequenters of the theatre.

I accordingly applied to M. Mason, Esq., of the King's Theatre, in the early part of the season of 1832, and immediately received his kind permission to make the experiment, which I have since continued at the Opera House, and also at the Theatres Royal, Drury Lane and Covent Garden, by the kind permission of the lessees, and with every pros-

pect of ultimate success. A person has lately thought proper, in his anxiety for popular notice, to attack this system of lending opera glasses at the theatres, (and the paragraph has since been copied extensively into the journals, at the private expence of a neighbouring optician,) and in a work recently published he has introduced to the notice of his readers (of whom I understand he has very few) a paragraph, cautioning them against the use of opera glasses lent on hire at the theatres, as they may catch ophthalmia. This enlightened individual should have told his readers, that persons afflicted with ophthalmia are in great pain, and totally blinded for the time, and thus are not at all likely to visit any theatre. I have since understood that the paragraph was inserted to oblige a neighbouring optician, who does not view in any amiable light my moderate prices, or my system of supplying opera glasses at the theatres, which I do to some extent, the excellence of my glasses and my principle of business ensuring me an ample share of public patronage and support.

Conclusion.

I trust I have now fulfilled my promise, made to the reader in my introductory observations, and have given, with truth and fairness, all the information relating to spectacles, spectacle venders, and others, that is essential to my object of introducing a wholesome change in the qualities and prices of spectacles supplied to the provincial wearer; and to the ability of performing this task I have presumed to aspire, from the circumstance of having travelled in most parts of the united kingdom as a spectacle maker, supplying spectacles wholesale to the different venders, and also from having supplied them

extensively in London to the opticians, and many spectacle wearers, with uniform success. In the course of this my imperative but unpleasant duty, I have endeavoured, as far as is consistent with my duty to the public, to avoid giving umbrage to any individual, and I shall be very willing to communicate any further information in my power to any person who will call upon or write to me (post paid) ; and should my kind patrons, the public, receive this first literary production (and concerning its reception I have a most parental anxiety) with welcome, I will endeavour occasionally to renew my humble efforts most heartily and zealously in their cause.

FINIS.

OPTICIANS and SPECTACLE VENDERS in Great Britain for whom J. T. Hudson has made spectacles ; intended to give the reader a knowledge of the general use of spectacles of the author's manufacture.

<i>Bath</i>	Mr. Abraham Mr. Tulley	<i>London</i>	Mr. Chamberlain Mr. Moon
<i>Bristol</i>	Messrs. King & Son Mr. Braham		Mr. Winter Mr. Rubergall
<i>Banbury</i>	Mr. Kalobergo		Messrs. Worthington and Allen
<i>Birmingham</i>	Mr. Carpenter		Messrs. Watkins & Hill
<i>Cheltenham</i>	Mr. Abraham Mr. Dallaway		Mr. Wrench
<i>Chester</i>	Mr. G. Lowe	<i>Liverpool</i>	Messrs. Bywater Mr. Abraham
<i>Cambridge</i>	Mr. Willson		Mr. Wood Mr. Jones
<i>Chatham</i>	Mr. Sherenbeck Mr. Igglesden	<i>Leamington</i>	Mr. Shorthose Mr. Hardern
<i>Cork</i>	Mr. Bennett	<i>Manchester</i>	Mr. Franklin
<i>Canterbury</i>	Mr. Goatley	<i>Maidstone</i>	Mr. Bartlett
<i>Derby</i>	Mr. Steer	<i>Norwich</i>	Mr. Dixon
<i>Dublin</i>	Mr. Mason Mr. Yeates Mr. Lynch Mr. Dowling Mr. Clark Mr. Tickell	<i>Nottingham</i>	Mr. Myers
<i>Dover</i>	Mr. Mummery Mr. Hopley Mr. Greenwood	<i>Newport, Isle of Wight</i> ...	Mr. Rowden
<i>Deal</i>	Mr. Veile	<i>Oxford</i>	Mr. Hickman Mr. Watts Mr. Fiske
<i>Exeter</i>	Mr. Abraham	<i>Shrewsbury</i>	Messrs. Stone and Allen
<i>Edinburgh</i>	Mr. Adie Mr. Francks	<i>Southampton</i>	Mr. Pegler Mr. Hawkins
<i>Gloucester</i>	Mr. G. Lowe	<i>Salisbury</i>	Mr. Bennett
<i>London</i> .	The late Messrs. Dollond, Adams, Bradberry, and Carpenter Mr. Bancks Mr. Harris Mr. Jones Mr. Dixey	<i>Portsmouth</i>	Mr. Fiske Mr. Stebbing
		<i>Plymouth</i>	Mr. Sandford
		<i>Winchester</i>	Mr. Hancock
		<i>Worcester</i>	Mr. J. Powell Mr. Cattaneo
		<i>Wolverhampton</i> ...	Mr. Allen.

And numerous others.

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